

Amendments to the Claims

This listing of the claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (original): A broadband switch arrangement comprising:
 - (a) a plurality of MEMS switches arranged on a substrate about an axis through said substrate, each MEMS switch being disposed on a common imaginary circle centered on said axis, and each MEMS switch being spaced equidistantly along the circumference of said imaginary circle, the circle having a diameter which is smaller than one half wavelength for all frequencies in a passband of said broadband switch;
 - (b) a conductive via in said substrate arranged parallel to and on said axis; and
 - (c) connections for connecting a RF port of each one of said plurality of MEMS switches with said conductive via.
2. (original): The broadband switch arrangement of claim 1 wherein the substrate has a ground plane therein, said conductive via passing through said ground plane without contacting said ground plane.
3. (original): The broadband switch arrangement of claim 2 further including a plurality of strip lines, each one of said plurality of strip lines being coupled to a RF contact of one of said plurality of MEMS switches.
4. (original): The broadband switch arrangement of claim 3 wherein said plurality of strip lines are radially arranged relative to said axis.
5. (original): The broadband switch arrangement of claim 4 wherein said plurality of strip lines and said plurality of MEMS switches are disposed on a first major surface of said substrate.

6. (original): The broadband switch arrangement of claim 5 further including a plurality of control lines disposed on said first major surface of said substrate, each control line being coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines.

7. (original): The broadband switch arrangement of claim 6 wherein each of the plurality of control lines has a first width and wherein each of the plurality of strip lines has a second width, the second width being at least three times greater than the first width.

8. (original): The broadband switch arrangement of claim 6 further including a plurality of conductive vias in said substrate arranged parallel to said axis and contacting said ground plane, each of said plurality of MEMS switches having a DC ground contact which is wired to one of the plurality of conductive vias contacting said ground plane.

9. (original): The broadband switch arrangement of claim 8 further including an impedance device coupling the conductive via on the central point to one of the plurality of conductive vias, the impedance device being disposed adjacent a second major surface of said substrate.

10. (original): The broadband switch arrangement of claim 5 further including a plurality of control lines arranged in pairs and disposed on said first major surface of said substrate, each control line pair being coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines.

11. (original): The broadband switch arrangement of claim 10 wherein each of the plurality of control lines has a first width and wherein each of the plurality of strip lines has a second width, the second width being at least three times greater than the first width.

Claims 12-14 (canceled)

15. (currently amended): A switch arrangement comprising:

(a) a plurality of MEMS switches arranged on a substrate about a central point, each MEMS switch being disposed on a common imaginary circle centered on said central point, said common imaginary circle having a diameter which is less than one half wavelength of frequencies in a passband of the switch arrangement; and

(b) connections for connecting a RF port of each one of said MEMS switches with said central point, wherein at least two of the MEMS switches are spaced equidistantly along the circumference of said imaginary circle and arranged to couple selectively at least two transmission lines to said central point and wherein a pair of the at least two transmission lines are disposed co-linearly of each other[.].

wherein the substrate has a ground plane therein and the switch arrangement further includes a conductive via in said substrate arranged parallel to and on a vertical axis which is normal to a major surface of substrate and which passes through said central point, the conductive via passing through said ground plane without contacting same.

16-18. (canceled)

19. (currently amended): The switch arrangement of claim [[18]]15 further including a plurality of strip lines, each one of said plurality of strip lines being coupled to a RF contact of one of said plurality of MEMS switches.

20. (original): The switch arrangement of claim 19 wherein said plurality of strip lines are radially arranged relative to said central point.

21. (original): The switch arrangement of claim 20 wherein said plurality of strip lines and said plurality of MEMS switches are disposed on a first major surface of said substrate.

22. (original): The switch arrangement of claim 21 further including a plurality of control lines disposed on said first major surface of said substrate, each control line being

coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines of said plurality of strip lines.

23. (original): The switch arrangement of claim 22 further including a plurality of conductive vias in said substrate arranged parallel to said axis and contacting said ground plane, each of said plurality of MEMS switches having a DC ground contact which is wired to a one of a plurality of conductive vias contacting said ground plane.

24. (original): The switch arrangement of claim 23 further including an impedance device coupling a conductive via on the central point to one of the plurality of conductive vias, the impedance device being disposed adjacent a second major surface of said substrate.

25. (original): The switch arrangement of claim 21 further including a plurality of control lines arranged in pairs and disposed on said first major surface of said substrate, each control line pair being coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines of said plurality of strip lines.

26. (original): An antenna comprising a plurality of end fire Vivaldi antennas arranged in a cloverleaf configuration in combination with the switch arrangement of claim 15 for controlling which one or ones of said plurality of end fire Vivaldi antennas is or are active.

27. (original): An antenna comprising a plurality of end fire Vivaldi antennas arranged in a cloverleaf configuration in combination with the switch arrangement of claim 15 for controlling which one of said plurality of end fire Vivaldi antennas is active.

28. (currently amended): A method of making a switch arrangement comprising:

(a) disposing a plurality of MEMS switches on a substrate in a circular pattern about a point, the circular pattern having a diameter which is less than a half wavelength of frequencies in a passband of the switch arrangement;

(b) disposing a plurality of RF lines disposed in a radial pattern relative to said point on said substrate; and

(c) connecting said plurality of RF lines to a common junction point at said point on said substrate via said plurality of MEMS switches whereby operation of a one of said plurality of MEMS switches couples a one of said plurality of RF lines to said common junction, wherein at least two of the MEMS switches of said plurality of MEMS switches are arranged to couple selectively at least two RF lines to said point and wherein a pair of the at least two RF lines are disposed co-linearly of each other[.],

providing a ground plane in the substrate and providing a conductive via in said substrate arranged parallel to and on an axis through said point and normal to a major surface of said substrate, the conductive via passing through said ground plane without contacting same.

29-31. (canceled)

32. (currently amended): The method of claim [[31]]28 further including disposing a plurality of strip lines on said surface and coupling each one of said plurality of strip lines to a RF contact of one of said plurality of MEMS switches.

33. (original): The method of claim 32 wherein said plurality of strip line and said plurality of MEMS switches are disposed on the first major surface of said substrate.

34. (original): The method of claim 33 further including disposing a plurality of control lines on the first major surface of said substrate, each control line being coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines.

35. (original): The method of claim 34 further including providing a plurality of conductive vias in said substrate arranged parallel to said axis and contacting said ground plane, each of said plurality of MEMS switches having a DC ground contact which is wired to a one of the plurality of conductive vias contacting said ground plane.

36. (original): The method of claim 35 further including coupling an impedance device between (i) the conductive via connected to the common junction point and (ii) at least one of the plurality of conductive vias, the impedance device being disposed adjacent a second major surface of said substrate.

37. (original): The method of claim 33 further including disposing a plurality of control lines arranged in pairs on the first major surface of said substrate, each control line pair being coupled to an associated one of said plurality of MEMS switches and being disposed between two adjacent strip lines.

38. (currently amended): A switch arrangement comprising:

(a) a plurality of MEMS switches arranged on a substrate about a common RF port, the RF port having a centerline and each MEMS switch being disposed spaced equidistantly from the centerline of said RF port by a distance which is less than one quarter wavelength for frequencies in a passband of the switch arrangement; and

(b) connections for connecting a RF contact of each one of said MEMS switches with said common RF port, wherein at least two of the MEMS switches of said plurality of MEMS switches are arranged to couple selectively at least two RF lines to said point and wherein a pair of the at least two RF lines are disposed co-linearly of each other[.].

wherein the substrate has a ground plane therein and the switch arrangement further includes a conductive via in said substrate arranged parallel to and on a vertical axis which is normal to a major surface of substrate and which passes through said central point of the common RF port, the conductive via passing through said ground plane without contacting same.

39-40 (canceled)

41. (new): A switch arrangement comprising:

(a) a plurality of MEMS switches arranged on a substrate about a first central point, each MEMS switch being disposed on a common imaginary circle centered on said

first central point, said common imaginary circle having a diameter which is less than one half wavelength of frequencies in a passband of the switch arrangement; and

(b) connections for connecting a RF port of each one of said MEMS switches with said first central point, wherein at least two of the MEMS switches are spaced equidistantly along the circumference of said imaginary circle and arranged to couple selectively at least two transmission lines to said central point and wherein a pair of the at least two transmission lines are disposed co-linearly of each other,

wherein at least one of the MEMS switches is arranged to couple selectively the first central point of the switch arrangement to a second central point associated with another switch arrangement via a transmission line segment.

42. (new): A method of making a switch arrangement comprising:

(a) disposing a plurality of MEMS switches on a substrate in a circular pattern about a point, the circular pattern having a diameter which is less than a half wavelength of frequencies in a passband of the switch arrangement;

(b) disposing a plurality of RF lines disposed in a radial pattern relative to said point on said substrate; and

(c) connecting said plurality of RF lines to a common junction point at said point on said substrate via said plurality of MEMS switches whereby operation of a one of said plurality of MEMS switches couples a one of said plurality of RF lines to said common junction, wherein at least two of the MEMS switches of said plurality of MEMS switches are arranged to couple selectively at least two RF lines to said point and wherein a pair of the at least two RF lines are disposed co-linearly of each other,

wherein at least one of the MEMS switches of said plurality of MEMS switches is arranged to couple selectively the common junction point to another common junction point associated with another switch arrangement via a transmission line segment disposed on said substrate.